(L281)

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

PROJECT NO .:

2583

CLIENT:

LOCATION:

OXYCHEM - NIAGARA PLANT

WEST OF PASNY CONDUITS, NORTH OF NIAGARA PLANT

CHEMICAL ANALYSIS

HOLE DESIGNATION: 0W650

(Page 1 of 3)
DATE COMPLETED: JULY 31, 1991

DRILLING METHOD: 12" OD HSA

CRA SUPERVISOR: A.P. KISIEL

BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION		MPL	_
000	REFERENCE POINT (Top of Riser) GROUND SURFACE	568.65 569.0	INSTALLATION	20%BW8	T AT E	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	Brown SILT, some fine sand, little fine to coarse angular gravel, trace clay, roots, dry to moist, FILL	567.0	ROAD BOX	1SS	X	4
5	Mottled gray, brown and green SILT, some sand sand, trace clay, moist, NATIVE Same, except mottled brown and gray, trace	367.0		2SS	X	9
.0	Red brown CLAY, some silt, moist	564.0	12"ø BOREHOLE	3SS	X	,
.5	Same, except moist to wet Same, with little to some silt, trace light		CEMENT/ BENTONITE GROUT	4SS	X	1
0.0	Red brown SAND, some fine to medium gravel, little silt, trace clay, moist to wet, TILL	560.4 559.0		5SS	X	•
2.5	Red brown SILT, some fine to coarse gravel and sand, trace clay, moist to wet, Same, with weathered bedrock BEDROCK — augered to 12.4 ft and set casing	557.2 556.6	6" BLACK IRON PIPE	6SS 7SS	X	3 >1
5.0	to 12.3 ft BGS) END OF OVERBURDEN HOLE @ 12.4 FT. BGS		3°¢ NX COREHOLE			
7.5						
0.0						
2.5						
5.0					æ	
7.5						
0.0	. Le constant de la c					

WATER FOUND STATIC WATER LEVEL

HOLE DESIGNATION: OW650 (Page 2 of 3) DATE COMPLETED: SEPTEMBER 5, 1991

(L282)

PROJECT NO .:

2583

OXYCHEM - NIAGARA PLANT

DRILLING METHOD:

NX

LOCAT

CLIENT:

CRA SUPERVISOR:

A.P. KISIEL

TION:	WEST	OF	PASNY	CONDUITS,	NORTH
	05 1114	~	DA DI A	NIT	

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

	OF NIAGARA PLANT							
DEPTH	DESCRIPTION OF STRATA	E LE > ▲ T − O Z	MONITOR INSTALLATION	田田口兄のひと	S S S S S S S S S S S S S S S S S S S	RECOVERY	R O D	WRETURN N
ft BGS		ft. AMSL 568.50				%	%	%
- 10.0	Overburden	656.7	12"ø BOREHOLE 6"ø BLACK IRON PIPE CEMENT/ BENTONITE GROUT					
- 12.5	DOLOSTONE(Oak Orchard Formation): bituminous, light to dark gray, very thin to medium bedded, fine to medium grained, saccharoidal — moderately to highly weathered, some small to medium vugs (12.3 to 18.6 ft BGS) — weathered fracture, broken rock (@ 13.3 ft BGS)	556.7	376 NX COREHOLE		1	81	60	100
20.0	 highly weathered fracture (@ 15.3 ft BGS) numerous weathered fractures (16.5 to 17.5 ft BGS) slightly weathered, trace stylolites (18.6 to 19.5 ft BGS) 							0
- 22.5	 trace NAPL staining (19.5 to 24.0 ft BGS) highly weathered, numerous fractures, abundant small to large weathered coral, trace gypsum and sphalerite, vuggy (19.5 to 28.6 ft BGS) 				2	89	59	0
25.0								
27.5	- weathered rock fragments (28.6 to							
30.0	29.0 ft BGS) — slightly weathered, trace small vugs, stylolites and gypsum (29.0 to 31.0 ft BGS) — slightly to moderately weathered fractured rock, trace small to medium vugs							
32.5	(31.0 to 36.0 ft BGS)				3	59	26	0
35.0	 slightly to moderately weathered fractures, some small to large vugs, 							
37.5	highly weathered coral, trace gypsum and dolomite (36.0 to 43.6 ft BGS)				4	76	42	0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

T STATIC WATER LEVEL

HOLE DESIGNATION: OW650 (Page 3 of 3)
DATE COMPLETED: SEPTEMBER 5, 1991

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

PROJECT NO .:

2583

(L282)

CLIENT:

DRILLING METHOD:

LOCATION:

OXYCHEM - NIAGARA PLANT

WEST OF PASNY CONDUITS, NORTH

CRA SUPERVISOR:

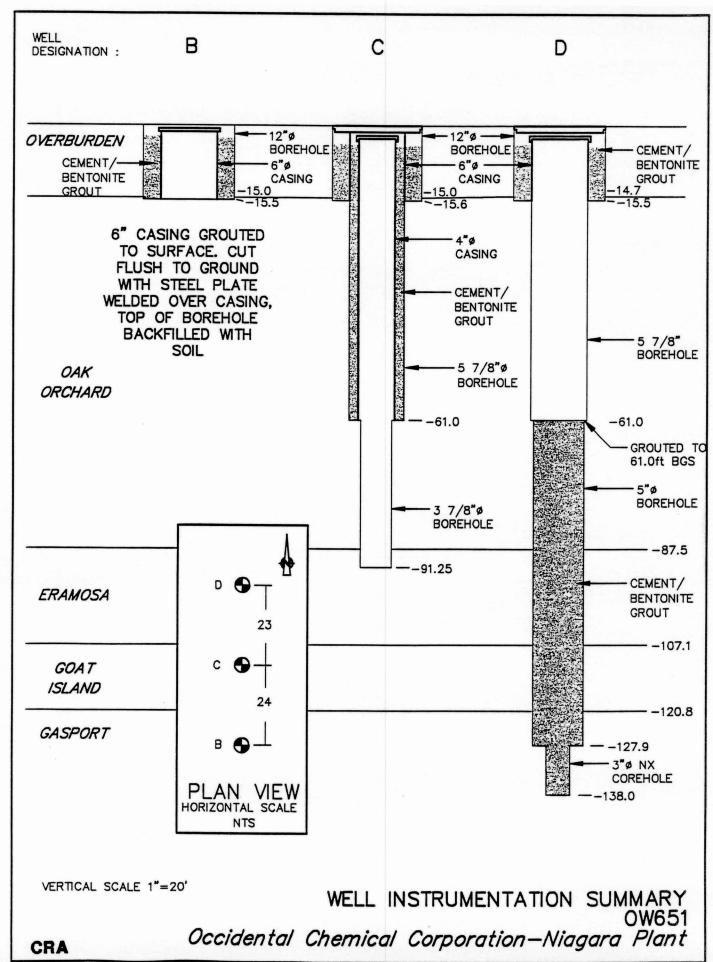
A.P. KISIEL

LOCATIO	ON. WEST OF FASN'T CONDUITS, NORTH		CRA SUPERVISO			r. KISI		
DEPTH	DESCRIPTION OF STRATA	E LE > 4 T - 0 Z	MONITOR INSTALLATION	BEDROCK L	ZUZ BUZ BUZ BUZ BUZ BUZ BUZ BUZ BUZ BUZ	の よ よ よ よ よ よ よ よ よ よ よ よ よ	200	WATER N
ft BGS		ft. AMSL 568.50				%	%	%
- 40.0					4	76	42	0
- 42.5	 slightly weathered fractured and overcored rock (43.6 to 45.0 ft BGS) 							
- 45.0	overcored rock (43.6 to 45.0 ft BGS) — some weathered fractures, trace stylolites, small vugs, trace gypsum (45.0 to 48.3 ft BGS)		3"# NX COREHOLE		5	104	52	0
- 47.5	- gypsum lined fractures and gypsum filled vugs (48.3 to 49.8 ft BGS)							- 1
- 50.0	 few slightly weathered fractures, trace gypsum filled vugs (49.8 to 50.2 ft BGS) slightly weathered, trace stylolites, trace small vugs, some gypsum filled vugs no fractures (50.2 to 58.5 ft BGS) 							
- 52.5	The fractains (co.2 to co.e it boo)				6	100	90	0
- 55.0								
- 57.5	END OF HOLE @ 58.5 FT. BGS	510.5						
- 60.0	END OF HOLE & JO.S FT. BGS							
- 62.5						*		
- 65.0								
- 67.5	,							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

T STATIC WATER LEVEL



(L283)

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

PROJECT NO .:

2583

CLIENT:

OXYCHEM - NIAGARA PLANT

LOCATION:

NIAGARA PLANT

CHEMICAL ANALYSIS

HOLE DESIGNATION: OW651D

(Page 1 of 6) JULY 29, 1991 DATE COMPLETED:

DRILLING METHOD: 12" OD HSA

CRA SUPERVISOR: A.P. KISIEL

BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION	MONITOR INSTALLATION		MPL	
863	REFERENCE POINT (Top of Riser) GROUND SURFACE	ft AMSL 568.49 568.7	INSTALLATION	Z J M B E C	ST ATE	Cryo
	Brown and gray SILT, some sand, trace gravel and roots, dry, FILL	568.3	ROAD BOX	1SS	\times	8
.5	Brown and gray SAND, some fine to coarse angular gravel, dry Brown, red brown and gray SILT and CLAY,	566.7		255	X	11
0	some fine to coarse gravel, some sand, dry Brown, gray and green CLAY, some silt, some fine gravel, some sand, moist Same, except mottled red brown, brown, gray,	564.7		355	X	1
5	green and black, trace fine to medium subrounded gravel, trace sand and roots Same, except some silt, trace fine to coarse		BOREHOLE	4SS	X	,
0.0	subangular to subrounded gravel, trace to little sand, trace roots	55 8 .7	CEMENT/ BENTONITE	5SS	X	1
2.5	Mottled red brown, brown, gray, green and black SILT and CLAY, little sand, trace fine to coarse gravel, trace red brown laminated clay mass, moist		GROUT	6SS	X	1
2.3		554.7	6° Ø BLACK IRON PIPE	755	X	
5.0	Gray fine to coarse angular GRAVEL, wet BEDROCK — augered to 15.5 ft BGS and set casing to 15.3 ft BGS	554.0 552.3		8SS	\triangle	>1
7.5	END OF OVERBURDEN HOLE @ 15.5 FT. BGS		NX COREHOLE			
0.0						
2.5						_
5.0						
7.5						
0.0						
2.5						

WATER FOUND \(\subseteq \text{STATIC WATER LEVEL } \subseteq \)

201

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

HOLE DESIGNATION:

OW651

PROJECT NO .:

2583

DATE COMPLETED:

(Page 2 of 6) OCTOBER 10, 1991

(L284)

CLIENT:

OXYCHEM - NIAGARA PLANT

DRILLING METHOD:

NX

LOCATION:

NIAGARA PLANT

CRA SUPERVISOR:

A.P. KISIEL

DEPTH	DESCRIPTION OF STRATA	ZO-⊣⊁ <mrm< th=""><th>MONITOR INSTALLATION</th><th>BEDROCK</th><th>ZCZ WWWZCZ</th><th>あ出のの 大型町<000両よ</th><th>ROD</th><th>WATER TER</th></mrm<>	MONITOR INSTALLATION	BEDROCK	ZCZ WWWZCZ	あ出のの 大型町<000両よ	ROD	WATER TER
ft BGS		ft. AMSL				%	%	%
- 12.5	Overburden		BOREHOLE 6° BLACK IRON PIPE CEMENT/ BENTONITE GROUT					
- 15.0 - 17.5	DOLOSTONE(Oak Orchard Formation): bituminous, light gray, very thin to thinly bedded, fine grained, saccharoidal, highly fractured, moderately weathered, carbonaceous partings, solution pitting, vuggy — slightly weathered, trace small gypsum filled vugs, trace carbonaceous partings,	553.9	3"# NX COREHOLE		1	92	82	50
- 20.0	trace solution pitting (14.8 to 18.6 ft BGS) — moderately weathered, moderately fractured, some gypsum lined fractures, small to medium gypsum filled vugs, trace							
- 22.5	sphalerite, some coral (18.6 to 28.1 ft BGS) — numerous moderately weathered fractures, some gypsum lined (20.4 to 21.4 ft BGS) — moderately weathered, some coral, trace				2	106	92	50
- 25.0	gypsum filled vugs and gypsum lined fractures, some solution pitting (23.0 to 24.7 ft BGS) — sphalerite crystal in small vug							
- 27.5	(♥ 24.6 ft BGS) — weathered fracture (♥ 24.7 ft BGS) — sphalerite crystals (♥ 26.8 ft BGS) — slightly weathered, some solution							
- 30.0	pitting, trace coral, trace sphalerite, carbonaceous partings (26.8 to 28.1 ft BGS) — moderate to highly weathered, thinly bedded, some fractures, trace small to medium gypsum filled vugs and gypsum							
- 32.5	lined fractures, trace sphalerite, trace carbonaceous partings, trace coral (28.1 38.1 ft BGS) — highly weathered zone with some coral,				3	92	89	0
- 35.0	little solution pitting, trace sphalerite 28.7 to 29.6 ft BGS) — medium to highly weathered void (2" Ø) lined with carbonaceous material							
- 37.5	(@ 28.8 ft BGS) — weathered fracture (33.5 to 33.6 ft BGS) — medium gypsum filled vug (● 33.7 ft BGS)							
- 40.0	— medium gypsum filled vug and gypsum lined fracture (@ 36.6 ft BGS) — few moderately weathered fractures (37.8 to 38.1 ft BGS)				4	88	76	0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

I STATIC WATER LEVEL

(L284)

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

HOLE DESIGNATION:

PROJECT NO .:

2583

DATE COMPLETED:

OW651D (Page 3 of 6) OCTOBER 10, 1991

CLIENT:

OXYCHEM - NIAGARA PLANT

DRILLING METHOD: NX

LOCATION:

NIAGARA PLANT

CRA SUPERVISOR:

A.P. KISIEL

)EPTH	DESCRIPTION OF STRATA	E E > 4 ⊢ − O Z	MONITOR INSTALLATION	BEDROCK -ZT-WR-Z-	ZJZBWK	RECO>ERY	RGD	WAT ERN
t BGS		ft. AMSL				%	%	%
42.5	— slightly to moderately weathered, some medium gypsum filled vugs, trace coral, trace solution pitting, trace carbonaceous partings and gypsum lined fractures (38.8 to 44.9 ft BGS)				4	88	76	0
45.0 47.5	 vertical and inclined fractures (42.5 to 43.2 ft BGS) moderately weathered fracture, trace sphalerite (@ 42.9 ft BGS) gypsum filled vug (@ 44.0 and 44.7 ft BGS) slightly to moderately weathered, some medium sized gypsum filled vugs, trace 		3"∮ NX COREHOLE					
50.0	medium gypsum masses, trace coral, little sphalerite, fine grained, trace stylolites (44.9 to 53.9 ft BGS) — weathered fracture (© 46.7 ft BGS) — gypsum filled vug, trace sphalerite				5	101	98	0
52.5	(♠ 48.5 ft BGS)— weathered fracture (♠ 49.0 ft BGS)— gypsum mass, trace sphalerite							
55.0	(@ 49.9 ft BGS) — numerous weathered fracture (50.6 to to 51.3 ft BGS) — coral (51.7 to 52.4 ft BGS) — stylolite (@ 52.4 ft BGS)							
57.5	 bioturbated zone (52.4 to 52.6 ft BGS) very few fractures, trace solution pitting, large gypsum mass, large stylolite. 				6	102	102	
60.0	slight weathering, inclined bedding — large stylolite (@ 57.5 ft BGS) — large gypsum mass (58.1 to 58.6 ft BGS) — moderately weathered fracture (@ 58.6 ft BGS)							
62.5	 small stylolite (@ 61.0 ft BGS) inclined bedding (45ø from horizontal 61.0 to 63.3 ft BGS) stylolite (@ 63.7 ft BGS) 							
65.0	 few fractures, slightly weathered, little gypsum, trace solution pitting (63.9 to 73.9 ft BGS) 							
67.5					7	101	91	
70.0								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

STATIC WATER LEVEL

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

HOLE DESIGNATION: OW651D

PROJECT NO .:

2583

DATE COMPLETED:

OW651D (Page 4 of 6) OCTOBER 10, 1991

(L284)

CLIENT:

OXYCHEM - NIAGARA PLANT

DRILLING METHOD:

NY

LOCATION:

NIAGARA PLANT

CRA SUPERVISOR:

A.P. KISIEL

DEPTH	DESCRIPTION OF STRATA	M-M-V-V	MONITOR INSTALLATION	BEDROCK L	ZUZBWR	RECOVERY	R Q D	WRETURN N
t BGS		ft. AMSL				%	%	76
72.5	 gypsum lined fracture (@ 70.7 ft BGS) highly fractured zone, moderately weathered (71.1 to 71.4 ft BGS) gypsum mass (72.0 to 72.2 ft BGS) carbonaceous partings, moderatly fractured (73.0 to 73.9 ft BGS) 				7	101	91	0
75.0 77.5	 fine grained, trace coral, sphalerite, trace calcite crystals, stylolites, slightly weathered (73.9 to 83.9 ft BGS) coral (@ 76.0 ft BGS) sphalerite crystal (@ 76.2 ft BGS) 		3"# NX COREHOLE					
80.0	- stylolite (♥ 79.2, 80.0 and 81.4 ft BGS)				8	97	95	0
82.5	- small gypsum filled vug (@ 83.3 ft BGS) - fine grained, dark to light gray, some							
85.0	small to medium gypsum filled vugs, slightly weathered, trace carbonaceous partings (83.9 to 93.9 ft BGS) — small calcite filled vug (@ 85.3, 86.0 and 86.5 ft BGS)							
90.0	ARGILLACEAOUS DOLOSTONE(Eramosa Formation): bituminous, saccharoidal, light to medium gray, thin to medium bedded, fine to medium grained, some shaly partings, trace carbonaceous partings, trace small chert nodules, trace stylolites, gypsum filled vugs, veinlets	481.2			9	99	88	*
92.5	and partings — medium gypsum filled vug (● 92.7 ft BGS) — trace small chert nodules (92.7 to 93.9 ft BGS) — medium gypsum filled vug (● 93.2 ft BGS) — fine to medium grained, some shaly banding, shaly partings, slightly weathered,							
97.5	trace small chert nodules, one medium gypsum mass, trace gypsum lined fractures, trace stylolites (93.9 to 103.9 ft BGS) — slightly weathered shaly partings (98.0 to 98.4 ft BGS)				10	101	93	0
00.0								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

T STATIC WATER LEVEL

(L284)STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK) PROJECT NAME: SDCP - OFF SITE INVESTIGATION HOLE DESIGNATION: OW651D (Page 5 of 6) PROJECT NO .: 2583 **OCTOBER 10, 1991** DATE COMPLETED: CLIENT: OXYCHEM - NIAGARA PLANT DRILLING METHOD: NX LOCATION: NIAGARA PLANT CRA SUPERVISOR: A.P. KISIEL RUZ BWR CECO>E MONITOR DEPTH DESCRIPTION OF STRATA INSTALLATION 20 % % % ft BGS ft. AMSL medium gypsum filled vug (@ 100.7 ft BGS) 0 101 93 medium gypsum mass (@ 102.0 ft BGS) 10 102.5 large stylolite (*) 103.6 ft BGS) fine to medium grained, some large chert nodules, trace sylolites (103.9 to 108.8 ft BGS) chert (*) 104.2 ft BGS) -105.0 0 104 100 11 3" NX 461.6 -107.5DOLOSTONE(Goat Island Formation): COREHOLE bituminous, light to dark gray, thin to medium bedded, fine to medium grained, some chert medium chert nodule (@ 107.2ft BGS) chert (@ 108.0 ft BGS) - 110.0 - light gray, some massive chert nodules, trace shaly partings, trace stylolites, slightly weathered (108.8 to 118.8 ft BGS) - 112.5 99 0 12 96 - 115.0 - 117.5 — light gray to dark gray, some chert, trace gypsum masses, fine to medium bedded, fine to medium grained, slightly to moderately weathered (118.8 to 127.9 ft BGS) -120.0 447.9 DOLOMITIC LIMESTONE(Gasport Formation): dark to light gray, trace medium gypsum -122.5masses and gypsum filled veinlets, trace shaly partings, crinoidal fragments 77 0 13 87 numerous moderately weathered fracture, darker gray (@ 119.5 to 123.8ft BGS) medium gypsum filled vug (@ 121.5 ft BGS) -125.0 - medium gypsum mass (**9** 122.7 ft BGS)| -127.5 — lighter gray, finely bedded, fine to medium grained, trace crinoidal fragments, slightly weathered (127.9 to 138.0 ft BGS) -130.0 100 0 79 NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE WATER FOUND **▼** STATIC WATER LEVEL NM - NOT MEASURED

(L284)STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK) PROJECT NAME: SDCP - OFF SITE INVESTIGATION HOLE DESIGNATION: OW651D (Page 6 of 6) PROJECT NO .: 2583 DATE COMPLETED: OCTOBER 10, 1991 CLIENT: OXYCHEM - NIAGARA PLANT DRILLING METHOD: NX LOCATION: NIAGARA PLANT CRA SUPERVISOR: A.P. KISIEL RUMBER CORE ROD EDEROVAL MONITOR DEPTH DESCRIPTION OF STRATA INSTALLATION % % ft BGS ft. AMSL -132.5 14 100 79 0 3"# NX COREHOLE -135.0 -137.5 430.7 END OF HOLE @ 138 FT. BGS -140.0 -142.5 -145.0 -147.5 -150.0 -152.5 -155.0 -157.5 -160.0 NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE WATER FOUND T STATIC WATER LEVEL NM - NOT MEASURED

(L285)

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

CHEMICAL ANALYSIS

PROJECT NO .:

2583

CLIENT:

OXYCHEM - NIAGARA PLANT

LOCATION:

WEST OF UNION CARBIDE PLANT

HOLE DESIGNATION: OW652

DATE COMPLETED: (Page 1 of 3)
AUGUST 26, 1991

DRILLING METHOD: 12" OD HSA

CRA SUPERVISOR: A.P. KISIEL

t BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION		MPL	_
. 500	REFERENCE POINT (Top of Riser)	569.93	INSTALLATION	ama≰cz	ST ▲ T E	
_	Brown SILT, little clay, trace sand, moist,	570.2	ROAD BOX	R	-	
	FILL green and gray SLAG, some gravel and g	569.7 568.4				
2.5		568.2		1SS	\triangle	1
	Mottled brown and gray fine SAND, some silt,			2SS	IXI	
5.0	trace fine gravel, trace clay, moist to wet,	564.4	6° BLACK IRON PIPE	388		
'.5	Same, with trace fine subangular gravel, trace shells, moist to wet		4"# BLACK IRON PIPE	4SS	M	1
	Red brown SILT, some clay, moist Same, except laminating, increased clay content, moist to wet	562.2		5SS		
0.0	Laminated red brown and gray CLAY, some silt, trace fine sand lenses, moist Same, except red brown and brown, trace	559.6	BOREHOLE	6SS	X	
2.5	coarse gravel, trace sand, moist to wet Red brown SAND, little to some fine to coarse gravel, little silt, trace to little clay, wet, TILL	556.7		7SS	X	
5.0	Red brown SILT, some sand, little fine to coarse gravel, trace clay, moist to wet Same, with increased gravel content, moist	555.8	CEMENT/ BENTONITE GROUT	8SS		>
7.5	NON COMPETENT BEDROCK — auger to 14.6 ft BGS and set 6" casing, advanced roller bit to 17.5 ft BGS and set 4" casing END OF OVERBURDEN HOLE 7.5 FT. BGS	552.7	6°€ BOREHOLE			
0.0			3"ø NX COREHOLE			
2.5						
5.0						
7.5						
0.0						

WATER FOUND \(\subseteq \text{STATIC WATER LEVEL } \subseteq

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

HOLE DESIGNATION: OW652 (Page 2 of 3)
DATE COMPLETED: SEPTEMBER 16, 1991

PROJECT NO .:

2583

(L286)

CLIENT:

DRILLING METHOD:

NX

LOCATION:

OXYCHEM - NIAGARA PLANT WEST OF UNION CARBIDE PLANT

CRA SUPERVISOR:

A.P. KISIEL

DEPTH	DESCRIPTION OF STRATA	E LEV 4 O Z	MONITOR INSTALLATION	BINTER OF K	RUXBER	RECOVERY	ROD	WRETTURN TERN
ft BGS		ft. AMSL				%	%	%
- 12.5	Overburden		IRON 4*6 IRON	BLACK PIPE HOLE				
- 15.0 - 17.5	DOLOSTONE(Oak Orchard Formation): bituminous, light to dark gray, very thin to medium bedded, fine to medium grained, saccharoidal, carbonaceous partings and trace stylolites — light gray, fine grained, stylolites,	555.8	GROL 	ONITE	1	67	17	17
	few weathered fractures, calcite deposits in fractures (14.4 to 20.0 ft BGS)				2	90	0	17
- 20.0	 light to medium gray, medium grained, abundant vugs and weathered fractures, calcite deposits in fractures (20.0 to 22.1 ft BGS) 			-	3	83	19	0
- 22.5	 light to medium gray, medium grained, some stylolites, occasional vugs (22.1 to 33.0 ft BGS) 				54			
- 25.0	×							
- 27.5	— light gray, fine grained, some stylolites, deformed bedding planes (26.4 to 27.6 ft BGS)			4	4	100	80	0
- 30.0			3"¢ core	NX CHOLE				
- 32.5					5	98	98 -	0
32.3	– large calcite filled vug (@ 33.6 ft BGS)							
- 35.0	 large calcite filled vug (@ 34.7 ft BGS) weathered fracture (@ 35.4 ft BGS) 							_
- 37.5	 vertical fracture (@ 36.7 ft BGS) highly fractured zone, calcite deposits in fractures (37.1 to 38.2 ft BGS) 				6	87	64	0
- 40.0	 highly fractured zone, same calcite deposits in fractures, bands of pitted rock, few stylolites (40.6 to 47.5 ft BGS) 				7	89	55	0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

T STATIC WATER LEVEL

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

HOLE DESIGNATION:

PROJECT NO .:

2583

DATE COMPLETED:

OW652 (Page 3 of 3) SEPTEMBER 16, 1991

(L286)

CLIENT:

OXYCHEM - NIAGARA PLANT

DRILLING METHOD:

NX

LOCATION:

WEST OF UNION CARBIDE PLANT

CRA SUPERVISOR: A.P. KISIEL

DEPTH	DESCRIPTION OF STRATA	- O Z	MONITOR INSTALLATION	ROCK L	N B B B B B B B B B B B B B B B B B B B	EOVERY	D	EURR
ft BGS		ft. AMSL				%	%	%
	– calcite filled vug (@ 40.9 ft BGS)		3"≠ NX					
- 42.5	·		COREHOLE		7	89	55	0
- 45.0								
- 47.5								
- 50.0	 highly fractured, highly weathered fractures, abundant vugs, calcite deposits in fractures, few stylolites (49.9 to 51.2 ft BGS) 				8	92	74	0
- 52.5						J2		
- 55.0	 highly fractured zone, weathered fractures, little calcite deposits in fractures, occasional vug and stylolite (55.5 to 60.5 ft BGS) 							
- 57.5	fractures, occasional vug and stylolite (55.5 to 60.5 ft BGS)				9	62	20	0
- 60.0	END OF HOLE @ 60.5 FT. BGS	509.7						
- 62.5							*	
- 65.0								-
- 67.5								
- 70.0						*		

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

▼ STATIC WATER LEVEL

(L277)

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

PROJECT NO .:

2583

CLIENT:

OXYCHEM - NIAGARA PLANT

LOCATION:

EFW

HOLE DESIGNATION: OW653

(Page 1 of 3)
DATE COMPLETED: AUGUST 21, 1991

DRILLING METHOD: 8 1/4" ID HSA

CRA SUPERVISOR: A.P. KISIEL

	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION	MONITOR INSTALLATION		MPLE	
BGS		ft AMSL	INSTALLATION	ama κ cz	Ī	, N
	REFERENCE POINT (Top of Riser) GROUND SURFACE	573.47 573.8		B E R	T E	F
	Gray GRAVEL, some sand, dry to moist, FILL	572.8	ROAD BOX	155	M	48
	Black, yellow, buff and red fine to medium SAND, some brick, clay and ash, dry to moist	571.8				
2.5	Red BRICK, some fine to medium sand, dry to			2SS	\succeq	>10
	moist Augered to 4.0 ft BGS	500.0				
.0	Same, except moist	569.8		355	XI	>1
	Augered to 10.5 ft BGS				M	
.5	•		12°¢ BOREHOLE			
0.0						
	Red brown SILT, little sand, trace clay,	563.3	CEMENT/ BENTONITE	455	\bigvee	3
2.5	trace subrounded gravel, dry to moist, NATIVE Same, except some fine to medium round to	561.8	GROUT		()	
2.5	subrounded gravel, little clay			5SS	X	8
	Red brown and gray CLAY, little silt, soft,	559.5	6" BLACK IRON PIPE		M	
5.0	plastic, moist			6SS	\triangle	1
	Same, with trace gravel	557.8		755	\bigvee	2
7.5	Red brown SILT, some sand, little clay, little	556.4 555.8		/33	\triangle	-
	fine round gravel, hard, dense, moist Red brown SAND, some silt, some fine to			8SS	X	7
0.0	medium round to subrounded gravel, hard, dense, moist			955	\Rightarrow	>1
	BEDROCK- spoon refusal, augered to 21.8 ft	553.0				
2.5	BGS and set casing to 21.4 ft BGS END OF OVERBURDEN HOLE @ 21.8 FT. BGS	552.0				
	END OF OVERBORDEN HOLE W 21.8 FT. BGS					
25.0			NX COREHOLE			
5.0						
7.5	3					
						-
0.0						
32.5						
				1		

NOTES:

MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STATIC WATER LEVEL



HOLE DESIGNATION:

OW653 (Page 2 of 3) SEPTEMBER 10, 1991

PROJECT NO .:

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

DATE COMPLETED:

(L278)

OXYCHEM - NIAGARA PLANT

DRILLING METHOD:

12" OD HSA

LOCATION:

CLIENT:

EFW

2583

CRA SUPERVISOR:

A.P. KISIEL

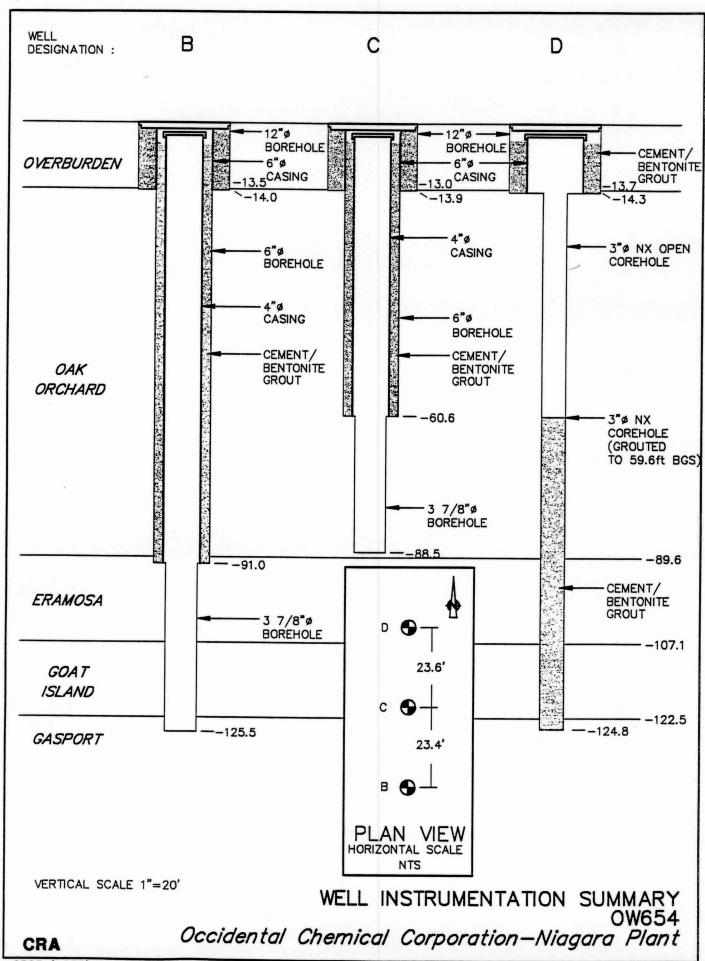
DEPTH	T I		MONITOR INSTALLATION		N	BINTEROCK L	NABEC Z	CORE	RQD	WETURN
ft BGS		ft. AMSL					1	%	%	%
- 20.0	Overburden			CEM BEN' GRO	EHOLE ENT/ TONITE UT BLACK		1			
- 22.5 - 25.0 - 27.5	DOLOSTONE(Oak Orchard Formation): bituminous, light to dark grey, very thin to medium bedded, saccharoidal, carbonaceous partings — rock fragments, trace solution pits, trace coral (22.2 to 23.6 ft BGS) — trace inclined bedding, slightly weathered, trace coral (24.2 to 25.4 ft BGS) — slightly weathered, some fractures, some stylolites (28.1 to 31.0 ft BGS)	551.6		3*6	HQ EHOLE		1	71	46	100
- 30.0	— moderately to highly weathered fractures, trace gypsum lined partings,						2	90	41	100
- 32.5	some small to medium vugs, solution pitting (31.4 to 34.4 ft BGS) — slightly weathered (34.4 to 36.1 ft BGS) — disturbed bedding, moderately weathered, trace stylolites (36.1 to 36.7 ft BGS) — slightly weathered, trace stylolites						3	93	68	0
40.0	- slightly weathered, trace stylolites, trace sphalerite (40.2 to 44.0 ft BGS) - fractured rock (41.5 to 41.7 ft BGS)						1	100	100	0
42.5	— slightly to moderately weathered, some small to medium vugs, some weathered coral, trace gypsum lined veinlets and partings (44.0 to 55.2 ft BGS)					5	5	98	95	0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

▼ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG (L278)(BEDROCK) PROJECT NAME: SDCP - OFF SITE INVESTIGATION HOLE DESIGNATION: OW653 (Page 3 of 3) PROJECT NO .: 2583 DATE COMPLETED: SEPTEMBER 10, 1991 CLIENT: OXYCHEM - NIAGARA PLANT 12" OD HSA DRILLING METHOD: LOCATION: **EFW** CRA SUPERVISOR: A.P. KISIEL RECOVERY MONITOR DEPTH DESCRIPTION OF STRATA INSTALLATION ft BGS % % ft. AMSL 50.0 52.5 99 99 0 3"# HQ medium gypsum filled vug (@ 54.5 ft COREHOLE 55.0 BGS) - trace small vugs (some sphalerite filled and some lined with dolomite), trace stylolites, trace weathered coral (55.5 to 70.2 ft BGS) 57.5 7 100 98 0 60.0 62.5 65.0 8 90 88 0 67.5 70.0 503.6 END OF HOLE @ 70.2 FT. BGS 72.5 75.0 77.5 NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE WATER FOUND T STATIC WATER LEVEL NM - NOT MEASURED



2583 (LOGS) AUG 11/92 REV.0 (LD19)

(L287)

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

CHEMICAL ANALYSIS

PROJECT NO .: 2583

CLIENT:

OXYCHEM - NIAGARA PLANT

LOCATION:

WEST OF UNION CARBIDE

HOLE DESIGNATION: 0W654

(Page 1 of 5)
DATE COMPLETED: AUGUST 23, 1991

DRILLING METHOD: 12" OD HSA

CRA SUPERVISOR: A.P. KISIEL

EPTH BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION			SAMPLE N S T		
863		ft AMSL	INSTALLATION	L Z	T		
	REFERENCE POINT (Top of Riser) GROUND SURFACE	570.04 570.3		B E R	E		
	Gray brown SILT, some fine to medium gravel, some fine sand, trace clay, vegetation, dry,	569.7 569.4	ROAD BOX	1SS	\times	>	
5	Black, gray, and blue CINDERS, little ash and slag, dry	568.3 568.0 567.1		255	X		
.0	Auger through SLAG to 2.0 ft BGS Black CINDERS, little ash and slag, moist Green and gray CLAY, some silt, little fine sand, trace vegetation, moist, NATIVE	564.3		355	X		
.5	Green to gray SILT, little fine sand, trace vegetation, moist Same, except mottled gray and brown, little	364.3	BOREHOLE	4SS			
0.0	clay, trace vegetation, shell fragments, moist to wet Same, except some clay, trace fine sand, moist	561.1	CEMENT/ BENTONITE	555	X		
2.5	Red brown CLAY, some silt, trace fine sand, trace very fine gravel, moist Red brown SILT, some clay, little fine sand,		GROUT 6 ⁻ • BLACK	6SS	X		
	trace fine to medium gravel, moist to wet, NATIVE Same, except grading to brown, some fine	556.6 556.0	6" BLACK IRON PIPE	7SS	X		
5.0	sand, little fine gravel, trace clay, moist to wet Same, except gray brown, some fine gravel,						
7.5	BEDROCK — augered to 14.3 ft BGS and set casing						
0.0	END OF OVERBURDEN HOLE @ 14.3 FT. BGS						
2.5							
5.0							
7.5	DNAPL		37 NX COREHOLE				
0.0							
2.5							

WATER FOUND \

STATIC WATER LEVEL

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

HOLE DESIGNATION:

OW654 (Page 2 of 5) AUGUST 27, 1991

(L288)

PROJECT NO .:

2583

DATE COMPLETED:

CLIENT:

OXYCHEM - NIAGARA PLANT

DRILLING METHOD:

LOCATION:

WEST OF UNION CARBIDE

CRA SUPERVISOR:

A.P. KISIEL

DEPTH	DESCRIPTION OF STRATA	Z0> <mr< th=""><th>MONITOR INSTALLATION</th><th>BEDROCK</th><th>B</th><th>RECOVERY</th><th>ROD</th><th>WRETUR TERN</th></mr<>	MONITOR INSTALLATION	BEDROCK	B	RECOVERY	ROD	WRETUR TERN
ft BGS		ft. AMSL				%	%	%
- 12.5	Overburden DOLOSTONE(Oak Orchard Formation): bituminous, light to dark gray, fine to medium grained, very thin to medium bedded, slightly to heavily weathered, saccharoidal, some gypsum, some coral,	556.3	BOREHOLE 6 6 BLACK IRON PIPE CEMENT/ BENTONITE					
- 15.0	trace stylolites, trace sphalerite, solution pitting, vuggy — slighlty to heavily weathered, some solution pitting, moderately fractured, several gypsum lined fractures, trace	330.3	SKOUT					
- 17.5	coral, trace stylolites (14.0 to 24.0 ft BGS) - moderately weathered fracture (@ 15.4 and 15.8 ft BGS) - stylolite (@ 15.9 ft BGS)		376 NX COREHOLE		1	93	75	
- 20.0	 gypsum lined fracture (@ 16.7, 17.2, 19.5 and 19.8 ft BGS) stylolite (@ 22.0 ft BGS) finer grained, several medium vugs, 							
- 22.5	bedding is slightly inclined (20° from horizontal), slight chemical odor (22.0 to 24.0 ft BGS – fine to medium grained, numerous slightly							
- 25.0	to moderately weathered fractures, trace coral, solution pitting, gypsum, sphalerite, coral (24.0 to 34.0 ft BGS) — small vertical fracture, slightly							
- 27.5	weathered (24.8 to 25.0 ft BGS) - slight iron staining (25.4 to 25.6 ft BGS) - moderately weathered zone with solution pitting, trace gypsum filled vugs, some coral (25.9 to 27.0 ft BGS)				2	83	22	
- 30.0	- large sphalerite mass (@ 26.4 ft BGS) - medium gypsum filled vug (@ 26.6 ft BGS) - coral (26.8 to 27.0 ft BGS) - two 1/2" vertical fractures (@ 27.5 ft BGS)							
32.5	 small gypsum filled vug (@ 27.9 ft BGS) moderately weathered zone (30.0 to 34.0 ft BGS) coral (30.1 to 30.2 ft BGS) 							
35.0	 large stylolite (@ 30.9 ft BGS) coral (@ 31.1 ft BGS) medium gypsum filled vug (@ 33.8 ft BGS) slightly to moderately weathered, fine 							
37.5	to medium grained, trace stylolites and carbonaceous partings, trace gypsum (34.0 to 44.0 ft BGS) - moderately weathered (34.0 to 34.3 ft BGS)				3	99	99	
40.0	-slightly weathered (34.3 to 44.0 ft BGS) - small gypsum filled vug, carbonaceous partings (34.9 ft BGS) - stylolite (@ 37.5, 38.3, 38.8 and 40.6 ft BGS)				3	33	33	

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

T STATIC WATER LEVEL

HOLE DESIGNATION: OW654 (Page 3 of 5)
DATE COMPLETED: AUGUST 27, 1991

PROJECT NO .:

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

(L288)

2583

CLIENT:

OXYCHEM - NIAGARA PLANT

DRILLING METHOD: CRA SUPERVISOR:

A.P. KISIEL

LOCATION:	WEST	OF	UNION	CARBIDE

DEPTH	TH DESCRIPTION OF STRATA MONITOR INSTALLATION		MONITOR INSTALLATION	スつのおりのの	RUX BUX BUX	RECO>EX	ROD	WRETTURN N
ft BGS		ft. AMSL				%	%	%
- 42.5	- gypsum lined fracture (@ 40.8 ft BGS) - medium gypsum filled vug (@ 41.0 ft BGS) - stylolite (41.5 ft BGS) - carbonaceous parting (@ 41.6, 42.5 and 44.0 ft BGS)							
- 45.0 - 47.5	 medium grained, moderately weathered, trace gypsum, small vugs, trace coral, (44.0 to 49.5 ft BGS) moderately weathered, solution pitting, several weathered fractures (44.7 to 46.5 ft BGS) coral (@ 44.8 and 45.6 ft BGS) 		3"¢ NX COREHOLE		4	98	95	
- 50.0	 small gypsum filled vug and veinlets 45.9 ft BGS) several small vugs with calcite crystals 46.3 ft BGS) 		CUREHOLE					
	 several small vugs with calcite crystals, trace coral (@ 47.3 ft BGS) coral (47.7 to 47.9 ft BGS) numerous slightly weathered fractures, 				5	100	68	
52.5	trace stylolites, some carbonaceous partings, medium to fine grained (49.5 to 53.5 ft BGS)							
- 55.0	 numerous fractures, carbonaceous partings (49.5 to 51.4 ft BGS) bedding inclined about 40 from horizontal (49.9 to 51.1ft BGS) 				6	85	76	
- 57.5	 vertical fractures (50.5 to 51.0 ft BGS) stylolite (@ 53.5 ft BGS) medium to fine grained, slightly to moderately weathered, trace gypsum, sphalerite (53.5 to 59.0 ft BGS) 							
60.0	 several medium sized gypsum filled vugs and veinlets, some solution pitting, moderately weathered (53.6 to 54.4 ft BGS) slightly weathered (54.4 to 59.0 ft BGS) 							
62.5	 trace sphalerite, small gypsum filled vug (@ 56.3 ft BGS) slightly to moderately weathered, stylolites, trace gypsum, some vugs and 				7	100	100	
65.0	solution pitting, trace carbonaceous partings (59.0 to 69.0 ft BGS) — small gypsum filled vug, carbonaceous partings (@ 60.4 ft BGS)							
67.5	 stylolite (@ 61.9 and 63.8 ft BGS) heavily weathered and eroded, trace gypsum (64.0 to 64.8 ft BGS) moderately weathered, solution pitting, 							
70.0	numerous small vugs; some gypsum filled, several gypsum filled veinlets (64.8 to 69.0 ft BGS) — stylolite (@ 67.0 ft BGS)				8	90	67	
	- carbonaceous parting (67.8 ft BGS) EASURING POINT ELEVATIONS MAY CHANGE; REF							<u> </u>

SURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

(L288)

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

HOLE DESIGNATION:

PROJECT NO .:

2583

DATE COMPLETED:

CLIENT:

OXYCHEM - NIAGARA PLANT

DRILLING METHOD:

OW654 (Page 4 of 5) AUGUST 27, 1991

LOCATION:

WEST OF UNION CARBIDE

CRA SUPERVISOR:

A.P. KISIEL

DEPTH	DESCRIPTION OF STRATA		BEDROCK L	RUZ Burk	CORE	RQD	W E T U R N	
ft BGS						%	%	%
· 72.5 · 75.0	- fine to medium grained, moderately to slightly weathered, trace gypsum (69.0 to 79.0 ft BGS) - medium gypsum filled vug and veinlet (@ 72.4 ft BGS) - shale parting (@ 72.5 ft BGS) - slightly weathered (72.5 to 79.0 ft BGS) - small calcite crystal filled vug (@ 74.4 and 75.2 ft BGS)				8	90	67	A
77.5			3"# NX COREHOLE					
80.0	 slightly weathered, trace gypsum, sphalerite, stylolites, carbonaceous partings (79.0 to 89.0 ft BGS) medium gypsum filled vug (♥ 81.8 ft BGS) 							
82.5	— stylolite (@ 82.3, 83.0 and 86.0 ft BGS)							
85.0 87.5	 medium gypsum and calcite filled vug (@ 86.4 ft BGS) small gypsum filled vug (@ 86.7 ft BGS) carbonaceous parting (@ 87.1 ft BGS) 				9	96	96	
90.0	- sphalerite (@ 87.2 ft BGS) - carbonaceous parting (@ 88.3 and 88.4 ft BGS) ARGILLACEOUS DOLOSTONE(Eramosa Formation), bituminous, light to medium	480.7		-				
92.5	gray, thin to medium bedded, fine to medium grained, some carbonaceous partings, shaly partings, shale banding, trace gypsum and sphalerite, trace stylolites—numerous moderately weathered fractures (90.5 to 90.8 ft BGS)				10	92	80	
97.5	gypsum lined parting (@ 91.4 ft BGS) slightly weathered, fine grained, little gypsum, trace sphalerite (98.0 to 100.3 ft BGS)							
00.0					11	100	43	

WATER FOUND

T STATIC WATER LEVEL

(L288)

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

HOLE DESIGNATION: OW654 (Page 5 of 5)
DATE COMPLETED: AUGUST 27, 1991

PROJECT NO .:

2583

CLIENT:

OXYCHEM - NIAGARA PLANT

DRILLING METHOD:

NX

LOCATION:

WEST OF UNION CARBIDE

CRA SUPERVISOR: A.P. KISIEL

DEPTH	DESCRIPTION OF STRATA	# LU > < F - O Z	MONITOR INSTALLATION		Z D X B M R	0300 43m<00m	œ O O	W E T UR
ft BGS		ft. AMSL				%	%	%
- 102.5 - 105.0	- fine grained, slightly weathered, trace gypsum, trace small chert nodules (100.3 to 110.3 ft BGS) - gypsum filled veinlet (@ 101.2 ft BGS) - shaly parting (@ 102.1 and 102.2 ft BGS) - small gypsum filled vug, trace sphalerite (@ 102.5 ft BGS) - medium gypsum filled vug (@ 103.0 ft BGS) - small chert nodule (@ 103.6 and 105.5 ft BGS)		3"# NX		12	100		
- 107.5 - 110.0	DOLOSTONE(Goat Island Formation): bituminous, medium to dark gray, thin to medium bedded, fine to medium grained, some chert, trace shaly partings, trace stylolites, slightly weathered, some gypsum – fine to medium grained, slightly	463.2	COREHOLE					
- 112.5	weathered, some chert, trace stylolites (110.3 to 120.3 ft BGS)							
- 115.0	- numerous weathered fractures (114.5 to 120.3 ft BGS)				13		41	
- 117.5					-			
- 120.0	- numerous weathered fractures, trace crinoids (120.3 to 124.3 ft BGS)							
- 122.5	DOLOMITIC LIMESTONE(Gasport Formation): bituminous, medium to dark gray, very thin to medium bedded, fine to medium	447.8			14	70	20	
125.0	grained, trace crinoidal fragments END OF HOLE @ 124.8 FT. BGS	445.5	Ш					
127.5	-							
- 130.0								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

T STATIC WATER LEVEL

(L289)

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

PROJECT NO .:

2583

CLIENT:

OXYCHEM - NIAGARA PLANT

LOCATION:

ELKEM PROPERTY

HOLE DESIGNATION: 0W655

(Page 1 of 3)
DATE COMPLETED: AUGUST 22, 1991

DRILLING METHOD: 12" OD HSA

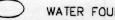
CRA SUPERVISOR: A.P. KISIEL

EPTH t BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION	MONITOR INSTALLATION		MPLE	
t BC2		ft AMSL	INSTALLATION	Z U M	T	> <z< th=""></z<>
	REFERENCE POINT (Top of Riser) GROUND SURFACE	571.14 571.4		8 6 8	T E	tuow
	Brown SILT, some gravel >3mm, some sand, pieces of limestone, FILL (topsoil 0-4")		ROAD BOX	1SS	X	23
2.5	Brown SILT, limestone pieces, some fine sand, black mottling, moist	569.4		2SS	X	9
5.0	Same, black mottling, gravel <1mm, more fragments, some clay	567.4		355		7
7.5	Brown red CLAY, some fine silt, black to orange mottling, NATIVE	565.4	BOREHOLE	4SS	X	9
	Same, fat clay, plastic		- CEMENT (5SS	X	17
10.0	Same, brown to red gray		GROUT	6SS	X	7
12.5	Red to gray CLAY, soft, plastic, saturated	559.4	6 ⁻ ■ BLACK IRON PIPE	755		0
15.0	Red CLAY, 3" limestone/boulder	557.4		855		41
17.5	Brown gray to red CLAY, some silt, boulder, rock fragments	555.4 553.4 553.0		9SS 10SS		37 >100
20.0	BEDROCK — augered to 18.4 ft BGS and set casing to 18.35 ft BGS END OF OVERBURDEN HOLE @ 18.4 FT. BGS	553.0	3"# NX COREHOLE			
22.5						
25.0						
27.5						
30.0						
32.5		,				

NOTES:

MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



WATER FOUND \(\square\) STATIC WATER LEVEL



PROJECT NAME: SDCP - OFF SITE INVESTIGATION

ELKEM PROPERTY

HOLE DESIGNATION:

PROJECT NO .:

2583

DATE COMPLETED:

OW655 (Page 2 of 3) OCTOBER 18, 1991

(L290)

CLIENT:

DRILLING METHOD:

NX

LOCATION:

OXYCHEM - NIAGARA PLANT

CRA SUPERVISOR:

A.P. KISIEL

DEPTH	DESCRIPTION OF STRATA	E LE V & T - O N		NITOR LLATION	BEDROCK -XTERVAL	RNUMBER	CORE CORE CORE CORE CORE CORE CORE CORE	R Q D	WR AETUR ERN
ft BGS		ft. AMSL					%	%	%.
- 17.5	Overburden			BOREHOLE 6 BLACK IRON PIPE					
- 20.0	DOLOSTONE(Oak Orchard Formation): bituminous, light to dark gray, very thin to medium bedded, saccharoidal, carbonaceous partings	<i>552.7</i>		BENTONITE GROUT		1	76	21	100
- 22.5	 broken rock, weathered (18.7 to 19.0 ft BGS) highly weathered, large vug (19.0 to 19.1 ft BGS) slightly weathered, some inclined 		-	3"# NX COREHOLE					
- 25.0	bedding, some inclined and horizontal weathered fractures, trace small vugs (19.1 to 22.0 ft BGS) — vertical fracture (21.4 to 21.6 ft BGS)					2	97	81	100
- 27.5	 slightly to moderately weathered, some solution pitting, trace stylolites, trace small to medium gypsum lined partings and vugs (22.0 to 34.5 ft BGS) weathered fracture (@ 24.5 and 								
- 30.0	25.5 ft BGS) - some weathered fractures (30.9 to 32.2 ft BGS)								
- 32.5						3	86	66	100
- 35.0	 moderately weathered, trace stylolites, trace small vugs, trace gypsum lined partings and gypsum filled vugs, trace coral (34.5 to 40.6 ft BGS) weathered fracture, trace dark brown 								
- 37.5	- weathered indictine, trace dark brown staining with chemical odor (35.0ft BGS) - weathered fractures (35.4 to 35.9 ft BGS) - moderately weathered, fossiliferous zone (37.6 to 40.6 ft BGS)					4	107	92	0
- 40.0	- slightly weathered, trace small vugs, trace stylolites, trace gypsum (40.6 to 44.0 ft BGS)								
- 42.5								j. 5	
- 45.0	 slighlty weathered, trace stylolites, small rugs and gypsum (44.0 to 64.0 ft BGS) 								
						5	97	97	0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

T STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

(BEDROCK)

PROJECT NAME: SDCP - OFF SITE INVESTIGATION

HOLE DESIGNATION:

PROJECT NO .:

2583

DATE COMPLETED:

OW655 (Page 3 of 3) OCTOBER 18, 1991

(L290)

CLIENT:

OXYCHEM - NIAGARA PLANT

DRILLING METHOD:

NX

LOCATION:

ELKEM PROPERTY

CRA SUPERVISOR:

A.P. KISIEL

DEPTH	DESCRIPTION OF STRATA	E LEV AT - ON	MONITOR INSTALLATION		20 3 0m0	RECOVERY	ROD	WRETUR TURN
ft BGS		ft. AMSL				%	%	%
47.5					5	97	97	0
50.0	– weathered coral (@ 49.6 ft BGS)							
52.5			3"# NX COREHOLE		6	102	12	0
- 55.0						,		
57.5	- disturbed bedding, inclined shaly partings, some gypsum (57.7 to 58.8 ft BGS) - trace brown staining (59.0 to							
60.0	59.7 ft BGS)				7	100	100	0
62.5	- some small gypsum filled vugs and veinlets, some small vugs (62.6 to 64.0 ft BGS)	507.4					24 L	
65.0	END OF HOLE @ 64 FT. BGS	307.4	_					
67.5								
70.0								
72.5								
75.0								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND

T STATIC WATER LEVEL